

REMARKS

Applicants have amended their claims in order to further clarify the definition of various aspects of the present invention. Specifically, Applicants have amended claim 1 to recite that the insulating film consists essentially of the compound having the specified borazine skeleton and specified properties, and is formed from a borazine-based resin composition with a metal impurity content of no greater than 30 ppm; and to recite in claim 1 that the compound has a repeating unit as in previously considered claim 15. Claims 13 and 14 have each been amended to incorporate therein the subject matter of previously considered claim 15. In light of amendments to claim 1, and in particular the recitation therein of the metal impurity content, claim 2 has been amended to recite a metal impurity content of no greater than 10 ppm. See, e.g., paragraph [0069] on page 29 of Applicants' specification. In addition, typographical errors in each of claims 10 and 11 have been corrected, claim 11 having been amended to recite the borazine compound consistent with the recitation thereof in original claim 11.

In light of previously discussed amendments, claim 15 has been cancelled without prejudice or disclaimer; in addition, claim 20 has been cancelled without prejudice or disclaimer.

Moreover, Applicants are adding new claims 21-29 to the application. Claims 21 and 24, each dependent on claim 1, respectively further define the compound in terms of how the compound is produced. That is, claim 21 recites that the compound is produced by a process which includes a first step of polymerizing a specified borazine and a hydrosilane in the presence of a solid catalyst, and a second step of removing the solid catalyst after completing the first step. Claim 24 recites that the compound is produced by a process which includes a first step of

polymerizing a specified borazine and a hydrosilane in the presence of a metal catalyst in a polymerization solvent, a second step of adding to a polymerization system of the first step a particulate scavenger which is insoluble in the polymerization system of the first step and adsorbs the metal component from the metal catalyst, after completion of the first step, and a third step of filtering out the scavenger to which the metal component has been adsorbed after completion of the second step. Claims 22 and 23, dependent respectively on claims 21 and 22, respectively recites that the solid catalyst is a supported catalyst comprising a catalyst supported on compound-based carrier, and recites that the second step of removing includes filtering out the catalyst supported on the compound-based carrier from the polymer formed in the first step. Note, for example, pages 28-41 of Applicants' specification. As to the metal scavengers, note, e.g., pages 44-46 of Applicants' specification.

New independent claim 25 recites an insulating film "consisting essentially of" the compound having a borazine skeleton and having a specific dielectric constant of no greater than 2.6 and a Young's modulus of 5 GPa or greater, the insulating film being formed from a borazine-based resin composition with a metal impurity content of no greater than 30 ppm, and the compound having a repeating unit as set forth in previously considered claim 15. Comparing claim 25 with claim 1 as presently amended, claim 25 does not recite a leak current of the compound. Claim 26, dependent on claim 25, recites that the insulating film is formed from a borazine-based resin composition with a metal impurity content of no greater than 10 ppm.

Claim 27 recites a borazine-based resin composition including a resin produced by a process according to claim 10.

New claims 28 and 29, each dependent on claim 10, respectively further defines the borazine compound and further defines the hydrosilane, consistent with the hydrosilane recited in original claim 12 and the borazine compound recited in original claim 11.

The objection to claims 7 and 15-19 (or claims 7 and 14-19; see the Office Action Summary of the Office Action dated August 7, 2007) under 37 CFR 1.75(c) as being in improper form, set forth in the first paragraph on page 2 of the Office Action dated August 7, 2007, is respectfully traversed, in view of the following. Thus, attention is respectfully directed to the Preliminary Amendment submitted March 25, 2005, in the above-identified application, removing multiple dependency from claim 7 (making claim 7 dependent only on claim 4); and also amending claim 14 such that claim 14 is a single-dependent claim. In view of amendments to, inter alia, claims 7 and 14 in the Preliminary Amendment submitted March 25, 2005, it is respectfully submitted that claims 7 and 14, as well as claims dependent thereon, were proper dependent claims as considered by the Examiner in the Office Action dated August 7, 2007 and should have been considered on the merits in the Office Action dated August 7, 2007. As the Examiner improperly failed to consider claims 7 and 15-19 on the merits therein, even though such claims were in proper form, it is respectfully submitted that the Examiner must consider such claims as presently pending and cannot make the next Office Action in the above-identified application a Final rejection, notwithstanding present amendments to the claims.

The undersigned notes with thanks the indicated allowance of claims 4-6, in the Office Action dated August 7, 2007. As claim 7 is a proper dependent claim and is dependent on claim 4, it is respectfully submitted that claim 7 should also be allowed, based at least on the reasons that the Examiner has allowed claim 4.

Applicants respectfully submit that all of the claims presented for consideration by the Examiner patentably distinguish over the teachings of the references applied by the Examiner in rejecting claims in the Office Action dated August 7, 2007, that is, the teachings of the U.S. patent documents to Mercer, et al., Patent No. 5,179,188, to Kirner, et al., Patent Application Publication No. 2003/0224156, to Motegi, et al., Patent No. 5,115,069, and to Monkiewicz, et al., Patent No. 6,100,408, Japanese Patent Document No. 2002-155143 (the Japanese patent document of Uchimaru, et al.), the abstract of the article by Inoue, et al., published in the Proceedings of the Symposium on Semiconductors and Integrated Circuits Technology, 2002, Vol. 63, page 96-101, and the article by Uchimaru, et al., entitled "Evaluation of Low-k Polymer Film Containing Borazine-unit", in Extended Abstracts (the 48th Autumn Meeting 2001) of The Japan Society of Applied Physics, under the provisions of 35 USC 102 and 35 USC 103.

Initially, the rejections of claims 1-3, 13, 14 and 20 "under 35 U.S.C. 102(b) as being anticipated by the abstract for the article . . . authored by Inoue et al. . . . , in view of Kirner et al. . . . or Mercer et al." are noted. It is respectfully submitted that these anticipation rejections over the combined teachings of two references are on their face improper, as, under the present circumstances, an anticipation rejection over the teachings of two references is clearly improper.

In any event, it is respectfully submitted that the teachings of the references as applied by the Examiner would have neither taught nor would have suggested such an insulating film as in the present claims, or such an electronic part formed using such insulating film, as in the present claims, including, inter alia, wherein the insulating film consists essentially of a compound having a borazine skeleton and having a specific dielectric constant of no greater than 2.6 and a Young's modulus of

at least 5 GPa, with the insulating film being formed from a borazine-based composition with a metal impurity content of no greater than 30 ppm, the compound of which the insulating film consists essentially having a repeating unit as in each of claims 1 and 25.

Furthermore, it is respectfully submitted that the teachings of these applied references would have neither disclosed nor would have suggested such an insulating film as in the present claims, having features as discussed in the immediately preceding paragraph, and, moreover, wherein the compound has a leak current of no greater than 1×10^{-8} A/cm². See claim 1.

In addition, it is respectfully submitted that the teachings of these applied references would have neither disclosed nor would have suggested such an insulating film as in the present claims, having features as discussed previously in connection with claims 1 and 25, and, moreover, wherein the metal impurity content of the resin composition is no greater than 10 ppm. See claim 2; note also claim 26.

Furthermore, it is respectfully submitted that these references would have neither taught nor would have suggested such a process for production of a borazine-based resin as in the present claims, wherein the process includes polymerizing a specified borazine compound and a hydrosilane in the presence of a solid catalyst, with the solid catalyst being removed after completing the step of polymerizing (see claim 8), particularly wherein the solid catalyst is a supported catalyst comprising a catalyst supported on compound-based carrier (see claim 9); and/or wherein the process includes a step of adding to a polymerization system including a specified borazine compound and a hydrosilane in the presence of a metal catalyst in a polymerization solvent, a particulate scavenger which is insoluble in the polymerization system and adsorbs the metal component from the metal

catalyst, after completion of polymerizing the specified borazine compound and hydrosilane, with the process including a further step of filtering out the scavenger to which the metal component has been adsorbed after addition of the scavenger (see claim 10).

Moreover, it is respectfully submitted that the teachings of the applied references would have neither disclosed nor would have suggested such an insulating film as in the present claims, formed using a compound with a borazine skeleton, and wherein the compound with a borazine skeleton is produced by a process as discussed previously. Note claims 21-24.

Furthermore, it is respectfully submitted that these applied references would have neither disclosed nor would have suggested such insulating film or such resin composition, or such process, as in the present claims, having features as discussed previously, and, additionally, wherein the borazine compound and/or hydrosilane utilized in forming the compound having a borazine skeleton in a molecular structure thereof (borazine-based resin) are those materials as set forth in claims 11, 12, 28 and 29.

In addition, it is respectfully submitted that the teachings of the applied references would have neither disclosed nor would have suggested such a borazine-based resin composition as in the present claims, including the repeating unit of the recited polymer, and wherein the composition further includes a solvent capable of dissolving the polymer and has a solid concentration of 0.5 wt% or greater and a metal impurity content of no greater than 30 ppm. Note claims 13 and 14.

Moreover, even assuming, arguendo, that the teachings of the applied references would have established a prima facie case of obviousness, it is respectfully submitted that the evidence of record, including the presently submitted

Declaration of H. Matsutani, overcomes any such prima facie case of obviousness, and establishes unexpectedly better results achieved according to the present invention. In this regard, and as will be established infra, the evidence of record shows unexpectedly better results in reduced impurity, reduced leak current and reduced specific dielectric content with improved Young's modulus, from structures and using processes according to the present invention, overcoming any possible prima facie case of obviousness established by the teachings of the applied references.

The invention as being claimed in claims rejected in the above-identified application is directed to a process for production of a borazine-based resin, a borazine-based resin composition, an insulating film including a compound having a borazine skeleton and electronic parts using such insulating film.

As described on page 1 of Applicants' specification, with miniaturization, increased output and faster signal speeds of communication devices in recent years, this had led to the need for greater flattening of films by chemical mechanical polishing; and increasing demands of greater heat resistance, mechanical properties, hygroscopicity, adhesion, moldability and high etching selection ratios, and particularly a low specific dielectric constant, for the insulating films. Efforts have been actively directed toward achieving lower dielectric constants and shorter heat treatment steps, as well as greater heat resistance and mechanical properties of the electronic part insulating materials.

Porous materials, with pores in the films, have been proposed as insulating film material, with research being actively progressing towards their application for LSI interlayer insulating films. Another low dielectric constant material is borazine,

which is known to have a lower calculated dielectric constant than benzene, and thin films thereof are also known to have high heat resistance.

However, as described on page 2 of Applicants' specification, when utilizing materials with pores, for insulating films, such films tend to exhibit lower film strength with lower dielectric constant, and, disadvantageously, peel off from desired surfaces during chemical mechanical polishing.

In addition, as described in paragraph [0008] on page 3 of Applicants' specification, in connection with a description of the present invention, the platinum catalyst remains as an unavoidable impurity in borazine-containing silicone polymer thin films produced by simple coating of a solution comprising a mixture of B,B',B''-trialkynylborazine compound and a hydrosilyl group-containing silicone compound in the presence of a platinum catalyst, and the metallic impurity can cause leak current and reduce or impair the performance of the insulating film.

Against this background, Applicants provide an insulating film of a compound having a borazine skeleton, with specified properties; borazine-based resin compositions used in forming the insulating film; and processes of forming the compositions and insulating film, as well as electronic parts formed using the insulating film, avoiding problems in connection with proposed techniques discussed previously. According to the present invention, the insulating film achieves reduced leak current by accomplishing reduced metal impurity content in the formed resin composition and insulating film, thereby having only minimal generation of leak current, while having adequate mechanical strength and improved reliability. Applicants have found that by reducing metal impurity content of the resin composition from which the insulating film is formed to no greater than 30 ppm, leak current can be adequately reduced, while avoiding a reduction in mechanical

properties and achieving a reduced specific dielectric constant. Note, in particular, paragraphs [0013]-[0015] on pages 4 and 5 of Applicants' specification.

In addition, Applicants provide specific procedures achieving reduced metal impurity content providing the unexpectedly better results of the present invention. As shown by evidence of record, it is respectfully submitted that not all techniques for removing metal impurity content achieves levels and results as in the present claims. In this regard, attention is respectfully directed to the enclosed Declaration of H. Matsutani. In Production Example 1-6 thereof, a metal impurity reduction technique is utilized, i.e., a known reprecipitation method is used, to form a borazine-based resin composition. Note Item 4 of this Declaration; note the specifics of the reprecipitation, described in Item 5 of this Declaration. As seen in Tables A and B respectively in Items 7 and 8 of this Declaration, platinum concentration of the resin composition 1-6 is higher than that of the present invention (compare with Production Examples 1-1 through 1-4 in Table 1 on page 69 of Applicants' specification); and specific dielectric constant, leak current and Young's modulus of insulating film 1-6 reported in the Declaration do not achieve values as achieved in the present invention. It is respectfully submitted that this evidence in the enclosed Declaration, and the evidence in the experimental data on pages 64-71 of Applicants' specification, including particularly Tables 1 and 2, show unexpectedly better results achieved according to the present invention, with respect to the processing used and product formed, further supporting a conclusion of unobviousness of the presently claimed subject matter.

The Japanese patent document of Uchimaru, et al. discloses mixing a B,B',B''-trialkynylborazine compound with a silicon compound having at least two hydrosilyl groups in the presence of a platinum catalyst to form a solution, the

solution being applied to the surface of a material to form a thin film of this polymer, this patent document disclosing that the method is useful in providing a coating film or the like with combustion resistance and heat resistance. Note the Abstract of Uchimar, et al.

As indicated by the Examiner, it is respectfully submitted that this reference does not disclose, nor would have suggested, such method or product as in the present claims, including reducing metal impurity to levels as in the present claims, by steps, e.g., of removing the solid catalyst after the polymerizing or of using the particulate scavenger, or of using a catalyst supported on compound-based carrier, and advantages thereof as discussed in the foregoing. Clearly, without removal of the platinum catalyst as provided in the present invention, to levels as in the present claims, it is respectfully submitted that the properties of specific dielectric constant and/or Young's modulus and/or leak current, in combination, would not be achieved according to the thin film of Uchimar, et al.

In addition, it is respectfully submitted that the published Japanese patent document of Uchimar, et al. is silent on an insulating property of the film, this patent document stating the film is useful for a coating film having burning resistance and heat resistance. It can be appreciated, these types of properties are not relevant to an insulating property. It is respectfully submitted that the published Uchimar, et al. Japanese patent application would have neither disclosed nor would have suggested such resin composition or insulating film, or products formed therefrom, or such processes, as in the present invention, and advantages thereof.

It is respectfully submitted that the secondary references applied by the Examiner together with the teachings of the published Japanese patent document of Uchimar, et al. would not have rectified the deficiencies of the teachings of this

reference, such that the presently claimed invention as a whole would have been obvious to one of ordinary skill in the art.

Mercer, et al. discloses crosslinkable fluorinated aromatic ether compositions which are useful as dielectric and protective materials in microelectronic articles, the compositions being described most generally from column 2, line to column 3, line 35. These composition can be made by condensation of a diphenol with a fluorinated compound, as described in column 4, line 52 to column 5, line 10. This patent document discloses that the compositions can be crosslinked for example by heating or irradiation to provide a solvent resistant material for electronic application. See column 4, lines 22-24. Note also column 9, lines 40-44. This patent discloses that dielectrics for electronic applications desirably contain low levels (generally less than 20 ppm) of ionic impurities, and that if a dielectric including a polymer is made by a synthetic route which requires the use of a transition metal reagent or catalyst, the effective removal of transition metal residues may be a difficult task; and that an advantage of the oligomers in this patent is that they can be made and subsequently cured by a route which does not involve transition metal species, and the potassium (or sodium) carbonate reagent and potassium (or sodium) fluoride by-product can be easily removed. Note column 10, lines 42-53.

Note that Mercer, et al. is directed to avoiding the use of catalyst, disclosing effective removal of transition metal residues "may be a difficult task". It is respectfully submitted that the teachings of this reference, in combination with the teachings of the Japanese patent document of Uchimaru, et al., would have neither disclosed nor would have suggested the procedures for reducing metal impurity content as in the present claims, or reducing metal impurities where a catalyst is

used in the polymerization step, much less the reduced level of metal impurity content achieved according to the present invention and advantages thereof.

In fact, it is respectfully submitted that the combined disclosures of the Japanese patent document of Uchimaru, et al. and of Mercer, et al. would have taught away from the present invention, including use of the catalyst and removal thereof, it again being emphasized that Mercer, et al. discloses to avoid catalyst.

Kirner, et al. discloses material suitable for use in electronic devices, describing, e.g., in paragraph [0013] on page 2 that it is desirable that the film has a controlled level of impurities; and that, in other words, the film should be deposited using ingredients that have minimal levels of nonvolatile impurities. In paragraph [0021] on page 3 of Kirner, et al., it is disclosed that the dielectric materials in this patent have a metal impurity level "of about 500 ppm or less".

Noting the relatively large amounts of impurity described in Kirner, et al., it is respectfully submitted that this reference, either alone or in combination with the teachings of the Japanese patent document of Uchimaru, et al., would have neither disclosed nor would have suggested the presently claimed subject matter, including level of impurity as in the present claims and/or removal techniques thereof as in the present claims, and advantages due thereto.

It is respectfully submitted that the additional teachings of the remaining prior art applied together with the teachings of the Japanese published application of Uchimaru, et al., and Mercer, et al. or Kirner, et al., would have neither disclosed nor would have suggested the present invention, including features as discussed previously.

Motegi, et al. discloses glycidoxy group-containing organosilicon compounds useful for the modification of interfacial properties of synthetic resins such as epoxy

resins, polyesters, polyurethanes, polyamides, polyimides, and the like produced by utilizing the reactivity of an epoxy group, hydroxyl group, carboxyl group and amino group, the glycidoxy group-containing organosilicon compounds being described most generally in column 1, line 66 to column 2, line 10 of this patent. A process for producing these compounds are described in column 2, lines 30-45, and includes subjecting a specified compound to a hydrosilylation reaction with a 1-end-hydrogenated diorganosiloxane oligomer in the presence of a catalyst such as a platinum compound. This patent goes on to disclose that after completion of the reaction, low boiling point ingredients remaining unreacted are evaporation-removed under reduced pressure, and, if desired and necessary, the resulting product is subjected to active carbon treatment etc. to remove the hydrosilylation catalyst or to decolor the product. See column 4, lines 6-14.

Note that Motegi, et al. only discloses use of active carbon treatment "if desired and necessary". It is respectfully submitted that the teachings of Motegi, et al., even in combination with the teachings of the published Japanese patent application of Uchimar, et al. and other references as applied by the Examiner, would have neither disclosed nor would have suggested the need for removing metal impurities from compositions as in the present invention, much less to a level as in the present claims, and advantages thereof.

Monkiewicz, et al. discloses a process for preparing 3-glycidyloxypropyltrialkoxysilanes from allyl glycidyl ethers and a trialkoxysilane via platinum-catalyzed hydrosilylation. The process is described most generally in column 2, lines 45-60. Note that this patent discloses in column 2, lines 63-67, that the catalyst need not be introduced into the reaction by way of appropriate metering systems and need not be separated off from the reaction mixture.

Emphasizing that Monkiewicz, et al. expressly discloses that the catalyst need not be separated off from the reaction mixture, it is respectfully submitted that the disclosures of the applied references, including Monkiewicz, et al., would have taught away from the presently claimed subject matter, including reduced level of metal impurities, especially to levels as in the present claims and/or processing techniques removing the metal impurities, and advantages thereof, as discussed previously.

In the following, rejections in the Office Action dated August 7, 2007, using teachings of either Inoue, et al. or the article by Uchimaru, et al. as primary reference, will be discussed.

The abstract of Inoue, et al. discloses organic/inorganic hybrid polymers containing borazine units, and that such polymers can be synthesized by B,B',B''-triethynyl-N,N',N''-trimethyl-borazine with silicon compounds such as tetramethylcyclsiloxane, with thin homogenous films of the linear polymer being made on a silicon wafer by spin-coating method, followed by annealing at 200-500°C under argon gas. This abstract discloses that the dielectric constants of these thin films were evaluated to be 2.8-2.2. This Abstract further discloses that the polymer thin film can be used as a hard mask for a low-k organic polymer interlayer dielectric, which can result in the total interlayer insulator with effective dielectric constant of 2.7.

It is respectfully submitted that the Inoue, et al. abstract is silent with respect to Young's modulus and leak current of the film, which features are features of the present invention. Further, it is respectfully submitted that Inoue, et al. is silent in connection with an insulating property of the film. Moreover, the Inoue, et al. abstract applied by the Examiner is silent in connection with removal of catalyst. It is

respectfully submitted that the teachings of this abstract of Inoue, et al., even in combination with teachings of other references as applied by the Examiner, including teachings of Mercer, et al. and of Kirner, et al., as discussed previously, would have neither disclosed nor would have suggested the presently claimed resin composition, insulating film, electronic product or processes, including characteristics such as Young's modulus and leak current, or reduced metal impurity concentration to levels as in the present claims, and advantages achieved by the present invention.

The article authored by Uchimaru, et al. (as characterized by the Examiner) evaluates relative dielectric constants of borazine compounds having 6-membered ring structures composed of boron and nitrogen. This article discloses subjecting specified borazine and benzene compounds to addition polymerization in an ethylbenzene solvent, in the presence of a platinum catalyst, the resulting solution being coated on a silicon wafer by using a spin coater. Relative dielectric constants were measured; this article discloses that in the borazine-carbosilane-based polymer, the relative dielectric constant at 1 MHz was 2.5; and that it was found that introduction of borazine-unit enabled to decrease the relative dielectric constant. Note especially the paragraph bridging pages 9 and 10 of the article as applied by the Examiner.

It is respectfully submitted that this article by Uchimaru, et al. is silent on Young's modulus and leak current of the film; and, moreover, the description in the Uchimaru, et al. article is silent on insulating properties of the film. Even taking into account the teachings of Mercer, et al. and of Kirner, et al. as applied by the Examiner together with the article by Uchimaru, et al., the combined teachings of these references would have neither disclosed nor would have suggested the presently claimed subject matter, including Young's modulus and/or leak current,

and/or reduction of metal impurity to levels as in the present claims, and advantages due thereto.

In connection with the subject matter of the present claims, it is respectfully submitted that the article by Uchimaru, et al. or the abstract of Inoue, et al., together with the teachings of Kirner, et al. and Mercer, et al., and even in light of the teachings of Motegi, et al., or of Monkiewicz, et al., would have neither disclosed nor would have suggested the presently claimed subject matter, specifically, features thereof as discussed previously. It is again emphasized that Monkiewicz, et al. discloses that the catalyst need not be separated from the reaction mixture, teaching away from the presently claimed invention.

The contention by the Examiner that at the conclusion of the reaction in Monkiewicz, et al., the catalyst may be removed by simple filtration, is noted. The Examiner points to no specific portion of Monkiewicz, et al. describing such procedure. Again, the Examiner's attention is respectfully directed to the disclosure in the last paragraph in column 2 of Monkiewicz, et al., that the catalyst need not be separated off from the reaction mixture.

The double patenting rejections set forth on pages 7-9 of the Office Action dated August 7, 2007, are respectfully traversed, in view of the following. In connection with these double patenting rejections, the Examiner's attention is respectfully directed to the different Assignees of the above-identified application, of U.S. Patent No. 6,924,545, and of Application No. 10/809,704.

The applied claims of No. 6,924,545 are directed to a low-dielectric-constant interlayer insulating film and a semiconductor device using such film. It is respectfully submitted that the claims of the patent applied by the Examiner do not

set forth a specific dielectric constant or Young's modulus, or maximum leak current, or impurity concentration, as in the present claims, and advantages due thereto.

In the double patenting rejection using the subject matter claimed in Application No. 10/809,704, the Examiner has applied claims 13 and 20 of No. 10/809,704. Such reliance on claims 13 and 20 is not understood, in that No. 10/809,704 included claims 1-9, as indicated in the Office Action dated January 17, 2008, in connection with No. 10/809,704. In any event, it is respectfully submitted that the subject matter claimed in No. 10/809,704 would have neither disclosed nor would have suggested the subject matter of claims 1 and 2 of the above-identified application, including, inter alia, the Young's modulus and specific dielectric constant and leak current, and metal impurity concentration, as in the present claims, and advantages thereof.

The contention by the Examiner in connection with the double patenting rejections, in the paragraph bridging pages 7 and 8, and pages 8 and 9, of the Office Action dated August 7, 2007, is noted. As contended previously, it is respectfully submitted that neither of Kirner, et al. or Mercer, et al., alone or in combination with the teachings of the subject matter claimed in No. 6,924,545 or Application No. 10/809,704, would have provided a suggestion of removing the metal catalyst from films as in the subject matter claimed in the respective patent and application. To emphasize, Kirner, et al. is mainly concerned with polymers made from silica sources, and this kind of polymer is generally produced without a metal catalyst. Moreover, Mercer, et al. is concerned with fluorinated polyethers, and does not relate to polymers as in the present invention. Furthermore, as discussed previously, Mercer, et al. suggests that removing metal impurity content is a difficult task, and suggests avoiding catalysts. Particularly in view of these teachings of Kirner, et al.


and of Mercer, et al., it is respectfully submitted that the teachings thereof would have neither disclosed nor would have suggested, either alone or in combination with the subject matter claimed in the respective applied patent and application, removal of the metal impurities, much less removal to the level as in the present claims, and advantages thereof.

In view of the foregoing comments and amendments, and also in view of the enclosed Declaration, reconsideration and allowance of all claims presently pending in the above-identified application are respectfully requested.

To the extent necessary, Applicants hereby petition for an extension of time under 37 CFR 1.136. Kindly charge any shortage of fees due in connection with the filing of this paper, including any extension of time fees, to the Deposit Account of Antonelli, Terry, Stout & Kraus, LLP, Account No. 01-2135 (case 1303.44954X00), and please credit any overpayments to such Deposit Account.

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP

By 
William I. Solomon
Registration No. 28,565

Attachment: Declaration Under 37 CFR 1.132 (4 pp.)

WIS/ksh
1300 N. 17th Street, Suite 1800
Arlington, Virginia 22209
Tel: 703-312-6600
Fax: 703-312-6666